Journal

OF THE NATIONAL ASSOCIATION
OF CHIROPODISTS

CONTENTS

	Page
Drugs Used in the Treatment of Fungous Infections .. M. R. Warren, Ph.D.	15
Use and Misuse of Soaps in Chiropody ..... A. L. Klein, D.S.C.	32
Silicone Cream as a Skin Protectant ..... S. C. Sivitz, D.S.C.	34
Feet and Diabetes as a Health Problem ..... Wm. C. Sindoni, D.S.C.	36
1954 Membership Directory	40
Contributions to Chiropody ..... H. L. Collins, D.S.C.	40
The Dental Profession Views the Potential of Chiropody V. H. Dietz, D.D.S., Ph.D.	41
New Drug and Technique in Treatment of Chronic Helomata ..... S. Shafritz, D.S.C.	45
Varicose Ulcer Therapy ..... S. L. Perlman, Pod.D.	49
Chiropodologia (Chapter XV)	53
Determinants in Normal and Pathological Gait	55
Abstracts and Health News	60
Organization News	65
Deaths Reported	74
Convention Dates	76

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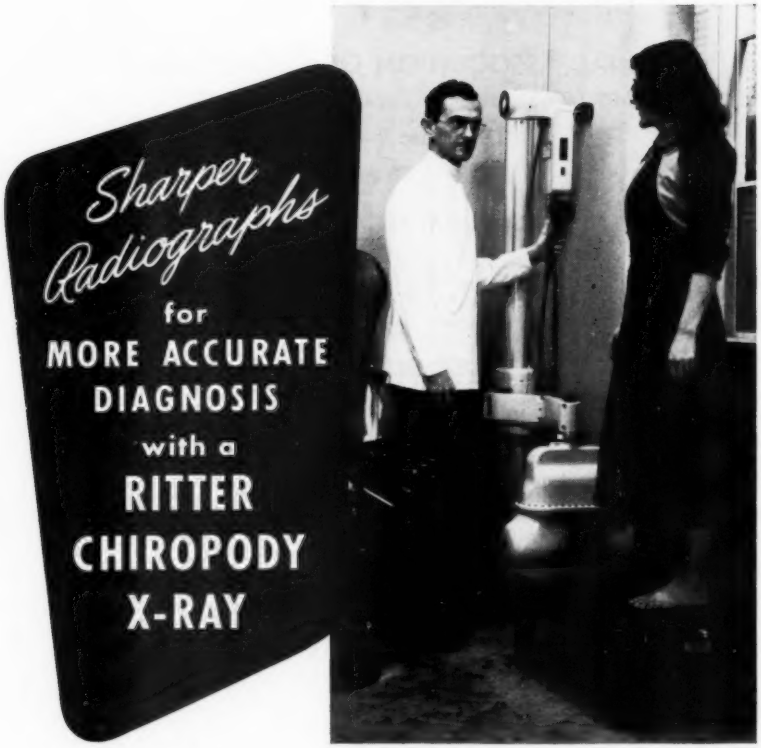

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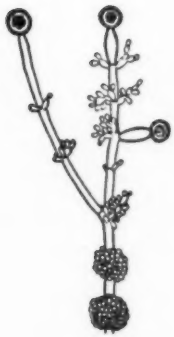

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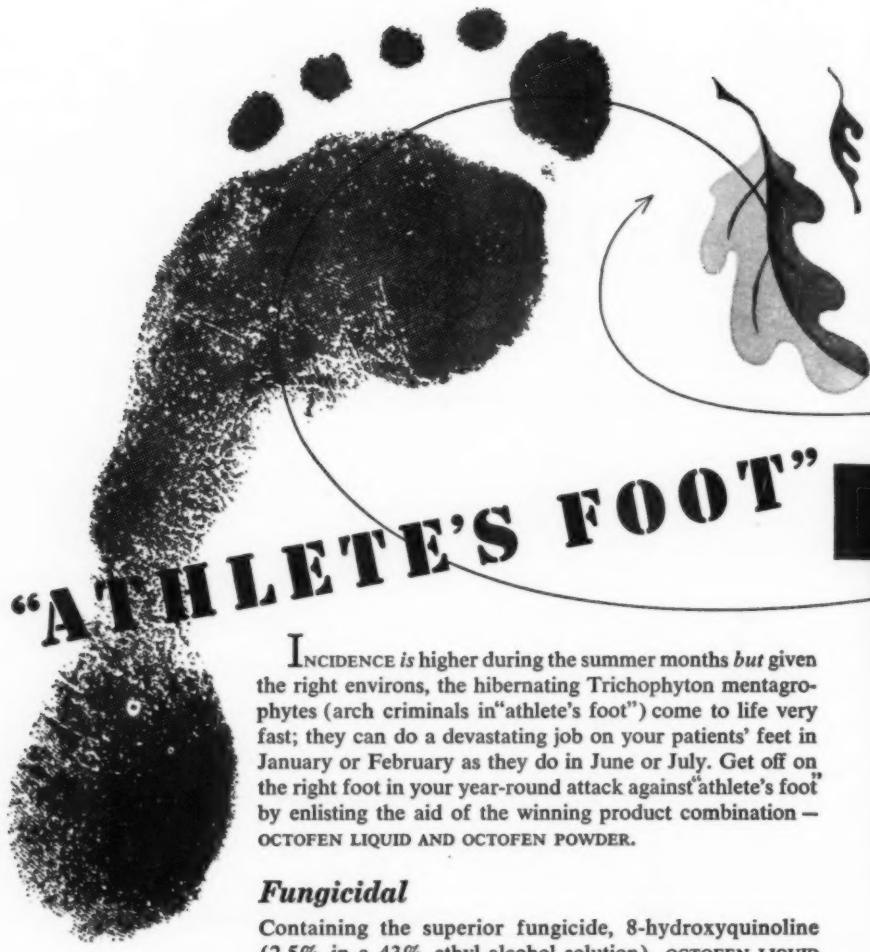

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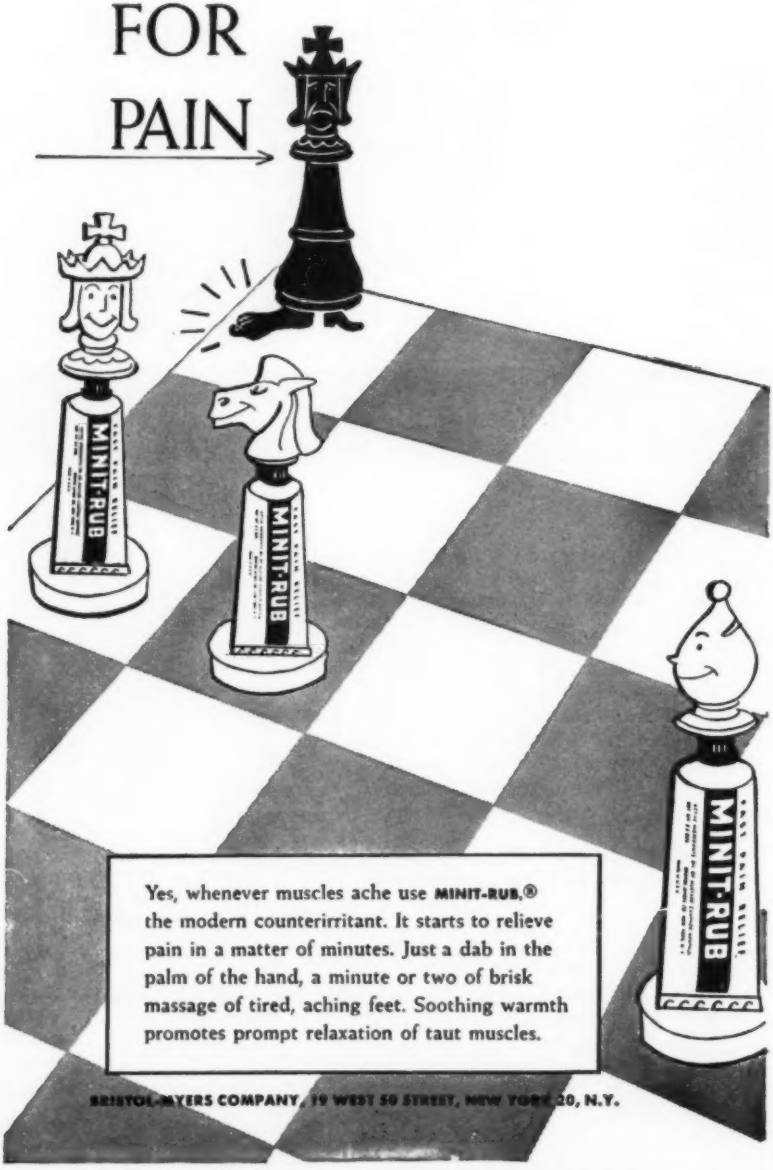

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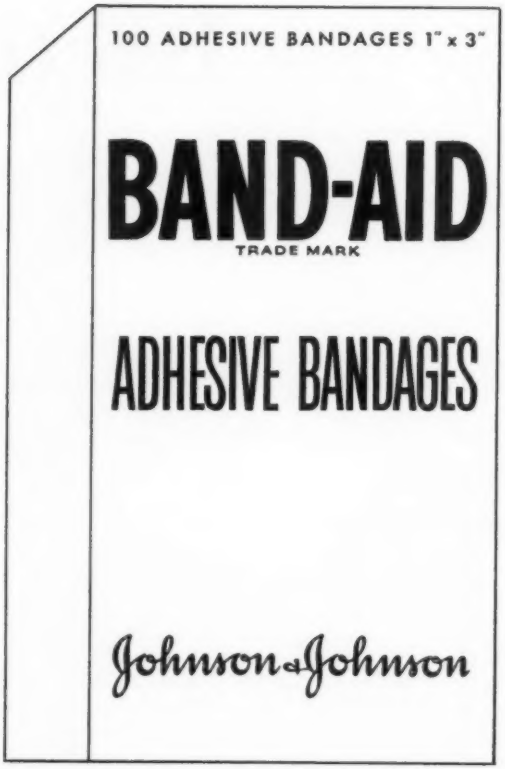

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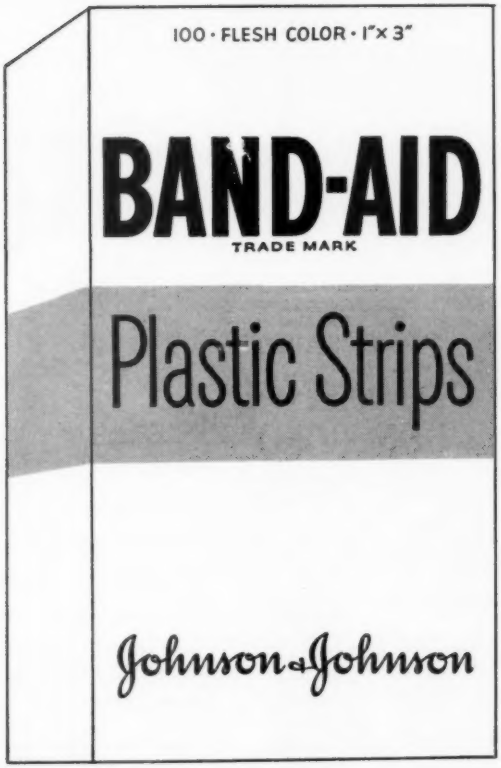

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VOLUME 44 MARCH, 1954 NUMBER 3

DRUGS USED IN THE TREATMENT OF FUNGOUS INFECTIONS

MARSHALL R. WARREN, Ph.D.*

ALTHOUGH the relationship of fungi to infections was known earlier than the role of bacteria in disease, we have made surprisingly little progress in the field of mycology. The fungi attracted considerable attention prior to the work of Pasteur, Koch and Lister but soon lost their prominence in the spotlight of medical research. Perhaps the attraction of newer things to mankind accounts for his rushing to the frontiers before he had adequately explored those fields with which he had become acquainted. We have learned something about many things, much about some things but have failed to explore the depths of other subjects. This type of behavior is all too common in many branches of science today. The result has been that while effective control measures have been developed for many bacterial infections, similar practices for the mycoses are not generally known. Thus, those who must deal with the fungous infections are seriously hampered in their progress. Such individuals wander aimlessly in the unknown awaiting critical information on the fungi to guide their future endeavors. While all of us are desirous of this knowledge and await it with great eagerness, we do little to help obtain it. Millions of dollars are justifiably spent each year in an attempt to find the cause of cancer, poliomyelitis, heart disorders and other dreaded diseases. Yet the less crippling diseases, such as the fungous infections which are so important to the members of your association, have received comparatively little attention. If comparable advances are to be made in this field, a similar enthusiastic program is a necessity.

It must be admitted that fatalities due to fungous infections, both superficial and deep, are much less numerous than those resulting from bacterial causes. A recent report shows that, "of 92,933 deaths due to infections and parasitic diseases in the United States in 1945, 284 or 0.3

*Division of Pharmacology, Medical Units, University of Tennessee, Memphis

per cent were due to the mycoses." The majority, if not all, of these deaths were probably due to the deep mycoses. However, these figures show the importance of a knowledge of these microorganisms when it is realized that this number approximately equals, "the number of deaths reported as caused by scarlet fever, measles or the typhus-like diseases (due to rickettsia)." The deaths due to mycoses were more than the total, "recorded from rabies, smallpox, relapsing fever, leprosy, brucellosis, paratyphoid fever, plague, cholera, and anthrax." One must conclude from these data that even the fatalities due to the fungi are numerically important. While the superficial mycoses probably do not contribute appreciably to the fatalities, they are nevertheless important considerations in the health and welfare of the people.

The incidence of dermatophytosis in the general population has been the subject of numerous investigations. Some of the more significant data have been obtained from the various camps of the Armed Forces, university groups, orphanages, penal institutions, and from surveys on veterans and industrial personnel. Added interest in the dermatophytes was stimulated by World War II since it was recognized that, "war, marching soldiers and their feet are inseparable problems." All of us are aware of the fact that the dermatophytes are extremely common and their mere presence does not justify the diagnosis of a particular disorder. It has been shown that about six to twenty-four per cent of normal individuals have fungi in the mouth and throat with no correlation between their presence and any disorder. So many factors are involved in critical sampling of the population for the incidence of dermatophytosis that one must accept the figures with some reservations. A review of the literature shows that the estimates range from about two or three per cent in some studies to as high as sixty-five per cent in others. The consensus of opinion from the larger samplings seems to be that about sixty-five per cent of the general population is affected. Some studies have been concerned with dermatophytosis in relation to its significance as an occupational health problem. Absenteeism was used as the major criterion in most instances. On this basis one study showed that there were only 0.0142 calendar days disability per male reported for mycoses of the feet as against 8.836 days disability per male from all other disabilities. Other workers have also concluded that they could not arrive at any marked effect on absenteeism. The observations do not rule out the possibility of decreased productivity while on the job as a result of the mycotic disorder. It has been shown that eight per cent of all hospital admissions in World War II were for cutaneous disease and dermatophytosis was second in importance. Little doubt can remain that in this particular occupation wherein the condition of the feet is important there was not only lost time but decreased productivity.

The causative organisms in dermatophytosis have been recognized for many years. Some disagreement exists with respect to which particular organism is most commonly associated with the disorder. However, it seems to be fairly well agreed that various species of Trichophyton, Epidermophyton floccosum (inguinale), Candida or Monilia albicans and, rarely, species of Microsporum are the most common offenders. An eight-year study on the fungi causing dermatophytosis showed that 65.4 per cent of the cases were caused by T. gypseum (mentagrophytes), 15.7 per cent by T. purpureum (rubrum), 13.5 per cent by Candida or Monilia

albicans, and 2.8 per cent by E. floccosum. It is probable that these percentages may vary from one part of the country to another. Certain other fungi are often associated with dermatophytosis but they are probably results of the disease rather than the causative factors. For example, there are some investigators who question whether Candida albicans is a cause of the condition or is merely secondary to it.

A recognition of the requirements for growth and development of the fungi is an important consideration in a discussion of therapeutic measures. Numerous studies have shown that temperature plays an important role. This factor has been recognized in the effect of the winter and summer months on the incidences of dermatophytosis. The aggravation of pre-existing fungous conditions in tropical climates was evident in World War II. A proper amount of moisture is necessary for full growth and development of the fungi. Culture at low humidities grow slowly and absence of moisture may cause them to remain dormant for some time. Most of the pathogenic fungi require oxygen for proper growth. Any alteration in this requisite may increase or decrease the activity of these organisms. The absence of certain nutritional requirements of the fungi can affect their growth. It is possible to obtain only the vegetative mycelium under some conditions and only reproductive structures under a different set of conditions. Proper hydrogen ion concentration has also been shown to be an important factor. Light may or may not be a factor depending upon the particular type of organism. The above requirements have been studied *in vitro* but there are doubtless other in vivo factors which are likewise important for the growth of fungi. The role of the endocrine glands, the nervous system, individual immunity, and many other factors remain to be investigated in the future.

Numerous investigators have pointed out the requirements for a good antifungal agent, yet the large number of them on the market today is evidence that no one preparation is satisfactory. Speaking of fungous diseases of the skin in 1927, Dr. White said, "the local treatment of this disease has proved most disappointing and disconcerting to the patient and to the physician, and this statement is equally applicable in England, France and America. The Englishman has relied on Whitfield's ointment, the Frenchman on tincture of iodine and on chrysarobin, and the Americans have tried many things, and all in all have failed." Can we claim much progress in the therapy of dermatophytosis during the twenty-five years since this statement? Compare this with the advancement in the fields of bacterial infections using the sulfonamides and the antibiotics and the answer is obvious.

The attributes of a good antifungal agent might be stated as follows: 1) It should have a broad antifungal spectrum, in vivo chiefly against the various species of Trichophyton, Epidermophyton, Microsporum, and Candida albicans. 2) It should not be an irritant or potent sensitizing agent in effective concentrations. 3) It should have a mild keratolytic action or sufficient penetration powers to reach the site of infection. 4) It should have the desired chemical stability. 5) It should have speed of action in accord with its intended use. 6) It should have the proper temperature coefficient. 7) It should not induce the development of resistant organisms. 8) It should have proper esthetic qualities.

Much conflict exists in the literature with respect to the efficacy of the various preparations which have been and are still employed as antifungal agents. Later in the discussion we shall consider some of the

many variables which may account for these discrepancies. Oster and Golden seem to have stated the difficulty when they said that the differences in results are concerned, "with the tester and with the test, never with the test substance." The majority, if not all, of the agents in current use are perhaps more fungistatic than fungicidal under conditions of clinical usage. A recognition of this fact has led some investigators to conclude that, "most of the so-called reinfections are only recurrences due to unsatisfactory and weak antifungal preparations, which are applied in high concentrations in an attempt to overcome their innate therapeutic inefficacy, which tends to perpetuate the infection and render the organisms resistant to the antifungal substance used."

It would be useless to attempt to enumerate all of the various drugs, mixtures, etc., which have been used in the treatment of dermatophytosis. Any substance which seemed to offer the slightest indication of usefulness has been tried. This frantic effort to correct this disorder has led to extreme overtreatment in many instances and as a result, "the human foot has become the target of unbelievable chemical abuse." So important is this fact that we shall return to it later and discuss its consequences in more detail. For the present let us briefly survey some of the components of the parade of antifungal agents.

The use of sulfur and copper salts as medicinal agents probably dates to very early times. Purification of air by burning sulfur was mentioned in the Odyssey and Hippocrates thought that sulfur was effective in the treatment of plague. Through the influence of Arabian medicine, the use of sulfur became widespread and it was found to be beneficial in certain skin disorders. Its mild keratolytic action coupled with evidence from plant pathologists of its fungicidal power justified trial as an antifungal agent in man. The mechanism of action was attributed to some chemical derivative of elementary sulfur which was perhaps either hydrogen sulfide or pentathionic acid. On the basis of these early experiences several sulfur-containing compounds were introduced in later years. More recent work with the dithiocarbamic acid derivatives indicates that the mechanism of action may reside in the interaction of the sulfide and certain amines. Lack of clinical effectiveness and incidence of undesirable skin reactions stimulated the search for more desirable agents.

The early information concerning the antifungal properties of the copper salts also stemmed from the alchemists. This knowledge was utilized by the plant pathologists as evidenced by the incorporation of these salts in many of the plant spray preparations, i.e. Bordeaux mixture. The astringent and irritant properties of the copper preparations seem to be the only basis for their suspected effectiveness in man. Early clinical experience with copper sulfate showed a rather high incidence of irritation with the concentrations which were employed. This effect resulted from both direct application to the feet and the use of the solution on stockings, shoes, etc. More dilute solutions were tried and led to the impregnation of cement in showers with copper as well as numerous other prophylactic measures. More recent introduction has been the iontophoretic method employing 0.2 per cent solutions of copper sulfate. No agreement exists with respect to the efficacy of this treatment. Some investigators claim as high as eighty-seven per cent cures while others report no beneficial effect. One worker came to the conclusion that the heat which is generated is the only source of remedial action.

Although some of the medicinal properties of salicylic acid were known to the Ancients, its use in the treatment of dermatophytosis was popularized by the introduction of Whitfield's ointment. This mixture of salicylic and benzoic acids serves to produce a slow and usually painless destruction of the epidermis. Such action has led to its use in varied skin disorders ranging from simple itching to the softening of corns and warts. Despite the increasing evidence of its ineffectiveness and dangers pursuant to its use, Whitfield's ointment is perhaps the most widely used home remedy for "athlete's foot." Numerous reports show that it lacks potency due at least in part to its inactivation by serum. Whatever beneficial action can be ascribed to it probably lies in its marked keratolytic properties which mechanically remove organisms and facilitate penetration of other agents. The fact that it causes persistent sensitiveness in many patients with severe dermatitis has caused several investigators to classify it as a dangerous preparation. A recognition of this property is sufficient to warrant due consideration before employing this mixture. Until more critical work is done in the clinic, Whitfield's ointment will probably continue to enjoy its questionable popularity.

The work of Koch served to call attention to the action of inorganic mercury compounds on various microorganisms. With this information as a starting point, these agents were used widely in the treatment of varied skin diseases and to produce exfoliation of the epidermis. The mechanism of action probably resides in their ability to coagulate proteins or their combination with certain essential chemical constituents of the protoplasm. An early realization of the numerous disadvantages of these agents stimulated interest in and led to the eventual synthesis of numerous organic mercurials. Although these newer compounds have been shown to be generally less toxic, less irritating and to penetrate better, they have not proved satisfactory as antifungal agents. Numerous objections have been voiced by various investigators. Not only has it been demonstrated that fungi can be grown in solutions of some of the agents but that they are irritants and sensitizers to light. One group of workers claim that thirty-five per cent of the cases of dermatitis seen resulting from treatment with antifungal agents were attributable to the mercurial compounds. Other evidence indicates that there may be a marked delay in healing and thus further aggravation of an existing lesion. The dangers which may accompany the use of such agents do not seem to justify the risk of using them.

Phenol, carbolic acid, was introduced as an antiseptic agent by Lister in 1867 and enjoyed widespread use for a number of years. Even in recent years numerous investigators have suggested that antifungal agents should be evaluated in terms of the phenol coefficient. Phenol and various substituted phenols, i.e., cresols, creosote, resorcinol, hexylresorcinol, pyrogallol, thymol and picric acid, have been employed either separately or in combination with other agents for the treatment of dermatophytosis. Whether their effect is exerted through some interference with the exchange of metabolites or an effect upon essential enzyme systems or both is not clear. In addition to this action many of these agents have some local anesthetic effect and thereby relieve itching. Unlike the mercurials, phenol penetrates tissue readily and if left in contact with the skin for prolonged periods can produce severe damage. Many factors have been shown to affect the efficiency of phenol and its derivatives. Some of these include alterations in hydrogen ion concentration, the

presence of serum or vesicle fluid and temperature. A mixture of phenol and camphor which has been proposed and used as an antifungal preparation may be caustic in the presence of perspiration. Furthermore, it has been reported that fourteen per cent of the cases of dermatitis resulting from antifungal agents are due to phenol and its derivatives.

Elementary iodine in the form of a solution, ointment or powder is unique in its action against microorganisms in that it shows little selective action; the concentration which is necessary to exert an effect is about the same for all organisms. Its action seems to be dependent upon the presence of free iodine but the exact mechanism involved has not been elucidated. *In vitro* studies have demonstrated that it is highly effective against some fungi as shown by the report that a 1:85,000 solution will kill Epidermophyton inguinale after fifteen minutes exposure. Other investigations reveal that it is considerably more potent *in vitro* than phenol and many of the other antifungal agents. Clinical investigators have expressed a great diversity of opinion with respect to the merits of iodine in the treatment of dermatophytosis. Some claim that it is a very poor or completely ineffective agent while others have found it to be highly efficient. It seems obvious that the compound itself does not change its properties from clinic to clinic. Thus, one must search elsewhere for the causes of the different results. It has been pointed out that iodine is not only limited in its power to penetrate the dead layers of the skin but that its activity is markedly reduced in the presence of serum or vesicle fluid. There can be no doubt about its irritating properties which frequently cause severe cases of dermatitis when used indiscriminately.

The use of chlorine and chlorine-containing compounds as antiseptic agents gained prominence during World War I although their ability to combat microorganisms was recognized and employed before the concept of microorganisms had originated. It was originally thought that these compounds exerted their effect through the release of oxygen but further studies suggested that there was probably chlorination of the protoplasm of the microorganisms also. This action may result in a direct effect upon the organisms or cause the removal of some metabolite which is essential for growth. Chlorine itself has limited usefulness because of its gaseous state, but compounds which release chlorine have been more useful. Their use in the treatment of dermatophytosis arose from *in vitro* studies which indicated that such substances as sodium hypochlorite were highly efficient antifungal agents. This information led to the familiar widespread use of sodium hypochlorite foot baths for the prophylaxis of dermatophytosis. Apparently little recognition was taken of the unstable nature of such solutions. However, it was eventually shown that immersion of the feet for one hour or even longer failed to kill the organisms. The bactericidal action, and presumably the antifungal activity, of chlorine is influenced by many factors such as excess organic matter, hydrogen ion concentration and temperature. Even though little chlorine is needed the maceration present in dermatophytosis would markedly reduce its clinical effectiveness.

Since the early work of Churchman and Ehrlich, numerous dyes have been employed as therapeutic agents in medicine and surgery. Presumably their combination with some important enzyme system of the microorganism inactivates it for proper physiological function. Those which have been tried in the treatment of dermatophytosis include gentian

violet, crystal violet, methyl violet, brilliant green, acid and basic fuchsin and acriflavine. Despite their rather extensive trial there is no unanimity of opinion as to their worth and effectiveness. It has been pointed out that not only is the type of organism of importance but that the activity of these dyes is affected by the hydrogen ion concentration and the presence of serum and organic material. Until further critical work is done the status of these agents must remain in the doubtful category.

The fact that some volatile oils were employed to inhibit mold growth in certain infusions prompted their trial as antifungal agents. Oil of cloves and oil of cinnamon as well as others were investigated but their lack of potency and their irritant properties were not conducive to widespread acceptance.

Various tars and balsams which are mixtures of aromatics, acids, etc. have been tried clinically in dermatophytosis. Even if they had proved effective, their irritant characteristics are so marked that secondary complications are often worse than the original infection. It has been shown in one study that approximately 43 per cent of the cases of dermatitis resulting from antifungal agents were due to tar and related substances.

Certain derivatives of quinoline, 8-hydroxyquinoline and vioform, are employed as the active ingredients in antifungal preparations. Although the former compound was introduced in Germany in 1895 as an "antiseptic and disinfectant," it has long been used as a bactericidal and antifungal agent. It was not intensively studied on the fungi which cause dermatophytosis until 1948. *In vitro* studies as well as subsequent clinical work indicated that this agent possesses significant antifungal activity with little evidence of irritation and sensitization. Clinical results with an alcohol solution of 2.5 per cent 8-hydroxyquinoline "appeared to be at least equal in the mild and moderate cases and superior in the severe cases to those encountered with the use of other antifungal agents." Until many more studies are carried out it is impossible to make a proper assessment of the value of this compound. The apparent lack of irritation and sensitization in the cases reported seem to offer some advantages over many agents.

The bactericidal properties of certain quinones have been known for over forty years but the discovery of antifungal properties is more recent. Until a few years ago they had apparently been limited to agricultural and textile use and no intensive study was reported of their effectiveness against human dermatophytes until the work of Oster and Golden in 1948. These investigators noted that p-xyloquinone, p-thymoquinone, and 2-methyl-1, 4 naphthoquinone (menadione) possessed outstanding antifungal activity against Trichophyton gypseum *in vitro*. It was inferred that all of the derivatives tested were perhaps too irritating and sensitizing for human use. Some later work by other investigators on another derivative, tetra-chloro-para-benzoquinone (Spergon) does not mention any appreciable untoward properties. Perhaps more extensive clinical trial will afford a basis for more critical evaluation and verify the reported resistance which organisms develop to these agents.

Various zinc salts have been studied on the assumption that the application of these agents might inhibit respiration of the microorganisms. However, the results were negative but a mixture of zinc chloride, phenol and salicylic acid did offer promise. This type of approach to the antifungal problem is to be commended and should serve as a stimulus for future endeavor.

The observations of Peck and his collaborators in 1938 and 1939 concerning the "role of sweat as a fungicide" initiated another approach to the problem of antifungal agents. It was pointed out that the effect of sweat was due at least in part to its fatty acid content. Some earlier work had suggested that the hydrogen ion concentration of sweat was important in protecting the skin against infection. The areas of the skin with a more alkaline pH were more prone to invasion by pathogenic fungi. Peck and his group showed that the pH itself was not so important as the fatty acids which accounted for the low pH of sweat. It was further pointed out that the areas of profuse sweating were more frequent sites of fungous infection, i.e., the axillae and the palms and soles. This profuse sweat served to dilute the antifungal properties of the fatty acids and thus permitted infection. Areas where there was little or no sweat lacked the fatty acids and thus were receptive to infection. It was on the basis of this information that the undecylenic, propionic and caprylic acid derivatives and their various mixtures were proposed as antifungal agents. Extensive clinical trial has proved somewhat disappointing with respect to their fungicidal properties. Although most investigators seem to agree that they are less irritating and sensitizing than many of the older preparations, they are probably only fungistatic under conditions of clinical use. As might be expected the hydrogen ion concentration seems to be an important consideration and varies from organism to organism. It has also been pointed out that these agents lack penetrating power and necessitate the use of a keratolytic. A disturbing piece of evidence indicates that organisms may become resistant to fatty acids after prolonged use.

The sulfonamides and antibiotics, penicillin, bacitracin, streptomycin, aureomycin, chloromycetin and terramycin, have been studied *in vitro* and *in vivo* for their antifungal properties. None of these agents have any significant effect on the fungi but may help to combat secondary infection. The sulfonamides have been shown to cause a high incidence of dermatitis which amounted to 35-70 per cent of the cases in one report. A consistent response of this type would seriously condemn the use of such agents for their antifungal effect.

One of the recent additions to the antifungal agent parade is a new benzothiazole (Asterol). *In vitro* work suggested that this substance offered considerable promise in its effect on the dermatophytes. Limited clinical work indicates that it is less irritating and sensitizing than some of the older preparations but lacks potency. There has been some indication of the development of resistance in some fungi. If this condition is found to hold true in more extensive trial, it could become a most serious disadvantage. Much more work to investigate these suspicions and to determine the effect of prolonged use of benzothiazole on several fungi is needed.

A few reports have appeared in the last few months dealing with the evaluation of various histamine antagonists as antifungal agents. Several of them are said to be effective in inhibiting fungi with pyribenzamine, diphenlpyraline, antergan and phenergan as perhaps the most effective. It has been noted that the activity of at least one of them is reduced in the presence of serum. This information is of considerable interest and should be investigated further to determine whether their effectiveness against fungi is correlated with some of the already known actions of

these agents. It may be that the local anesthesia induced by some of the histamine antagonists would be beneficial in the control of itching.

Preliminary work on two other types of chemical agents, thiocyanates and tetrahydropyrimidines, demonstrated that they have considerable antifungal activity at least *in vitro*. The idea concerning the thiocyanates originated with the observation that vapors of garlic and onions possessed bactericidal properties. The tetrahydropyrimidines are being studied as plant foliage fungicides but may eventually find their way into human use. Whether or not either of these types of substances have any potential value clinically remains to be determined.

Certain of the quaternary ammonium salts and the irritating agent, podophyllium, have been the subject of some reports but it is too early to make any definite evaluation.

It will be recognized that many of the substances used in the treatment of dermatophytosis, i.e., potassium permanganate, boric acid, aluminum silicate, sodium perborate, thiourea powder, Burow's solution, Castellani's paint and others, have been disregarded. This was intentional to permit more time for consideration of those agents which have been claimed to have more potent antifungal properties.

How can one account for such a variety of results when the same chemical substances have been employed by different investigators? Since the same discrepancies have occurred in both *in vitro* and *in vivo* studies, we shall consider them together. The hydrogen ion concentration of the medium has been found to influence the activity of these antifungal agents. It will be recalled that some organisms respond better to therapy at one pH while others respond better at another. The presence or absence of serum or vesicle fluid has been shown to reduce markedly the effectiveness of many agents. *In vitro* tests which have not taken this into consideration have given false impressions. Many of the studies have been carried out on very young cultures of fungi which show a different susceptibility to the antifungal agents. One probably never encounters a dermatophytosis wherein only the young fungi are present but on the contrary it is a long-standing condition with well-developed organisms. Some of the testing has been done on plant fungi with little or no correlation with their effect on human dermatophytes. That the type of vehicle or solvent can alter the activity of a drug is a well-established principle yet there has been little recognition of this factor. Differences in the time of contact of the agent with the microorganism may account for many of the discrepancies, especially in the *in vitro* studies. The ability to penetrate the superficial layers of the skin or the maceration encountered in dermatophytosis is an important requirement for an antifungal agent as we have noted. This may not be so important in the *in vitro* studies but certainly becomes a factor in the clinical effectiveness of an agent. Although it has been demonstrated that various factors, i.e., nutritional requirements, moisture, drug, etc., can alter the type of fungus, few investigators appear to have been cognizant of this fact. Incomplete removal of the drug in the *in vitro* screening process has led to erroneous statements concerning the effectiveness of the agents.

Many of the clinical reports have been very poorly controlled so that they are impressions rather than accurate evaluations. Organisms have not been identified either prior to or after treatment in many instances yet clinical "cures" are claimed. Undoubtedly prejudice has been a factor in some of the studies although this is difficult to substantiate. Lack of

objectivity and many other factors have contributed to make evaluation of the clinical effectiveness of these agents an impossibility. The reaction has been to try this, try that, try another and not the more reasonable approach to try, stop and evaluate and try again. So frantic has been the attempt to find a good agent that the investigators have not asked whether the agent itself, some associated agent or factor or chance might have contributed to their results. It is time that critical studies be made to help clarify the position of many of these agents and to push the undesirable ones into a deserved oblivion. The only reason that they remain on the market today is that people buy them.

Many problems relating to the fungi and dermatophytosis need to be solved before an intelligent approach can be made to the treatment of this disorder. The mode of transmission, proper methods of prevention, individual immunity, the possible relation to peripheral vascular disturbances, the role of vitamins and other nutritional factors, the influence of the endocrine and nervous systems remain to be investigated adequately. Data from studies on oxygen consumption, metabolic products, etc., will serve as a basis on which to judge the quantitative effects of the drugs and may lead to an elucidation of their mode of action.

This discussion has offered little hope for those who are faced with the problem of treating cases of dermatophytosis. No new nor highly effective antifungal agents have been revealed and many of those in existence have been discredited. "It seems that the present stage of dermatophytosis chemotherapy is comparable to the time when we treated lobar pneumonia with quinine derivatives." Hopkins and his collaborators have pointed out that, "until some fungicide with a higher order of effectiveness is discovered, treatment of dermatophytosis must be varied according to the severity of the case and the degree of sensitization and secondary infection." It should be emphasized that the problems encountered in the treatment of this disorder are essentially similar to those in other infections. Any agent which is non-irritating and which involves regime of better foot hygiene will generally bring about improvement. The tendency has been to overtreat in most cases and this has led to the frequent admonition not to use "strong" fungicides. Since many of the preparations in current use are irritants and serve only to make the disorder worse, this has been good advice. Numerous investigators are agreed that overtreatment has led to conditions which were far worse than the original infection. It is much better to be accused of undertreatment than to superimpose a dermatitis or secondary infection which may completely incapacitate a patient for weeks or months. A strong or effective fungicide, one that kills fungi in every stage of development on short contact without damage to host during or subsequent to therapy, is desirable but unfortunately is not available at the present time. If such an agent were available, there would be little need for the fumigation of shoes and socks to eradicate the infection.

In conclusion it can be said that there probably does not exist a potent, effective fungicide at the present time. Those that are in use are fungistatic at best under conditions of clinical use and serve to keep the infection in check but do little to eliminate it. The advice of Hopkins and his collaborators concerning the treatment of dermatophytosis is just as valuable today as it was in 1946. Proper foot hygiene, the use of non-irritating foot powders of the proper type, the removal of ill-fitting shoes

or shoes which contain irritant dyes and oils, adequate ventilation of the feet to permit evaporation of sweat and other such measures will do much to obviate the need of continual medication in many instances.

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USE AND MISUSE OF SOAPS IN CHIROPODY

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Soaps not only assist water in cleansing skin surfaces, but are invaluable in the successful treatment of dermatological conditions. However, they may not only aggravate existing dermatoses, but also create undesirable skin conditions. Therefore, some knowledge about them is important.

Normally, soaps contain 70 per cent soap material, 30 per cent water and a fraction of one per cent of salt. The raw materials are animal or vegetable fats or oils and water-soluble bases. These bases may be inorganic (sodium or potassium hydroxide) or organic (triethanolamine).

In the manufacture of these materials, the fats or oils are hydrolized (split by means of intense heat and pressure in the presence of steam and a suitable catalyst), which results in the production of fatty acids and glycerine. When the fatty acids are combined with a base, soap is the end-product.

Although soap, in itself, may be neutral, it always forms an alkaline substance, when combined with water. Therefore, the United States government prohibits the presence of more than one tenth of one per cent of free alkalis in toilet soaps.

Cleansing with a soap solution causes wetting, emulsifying, and dissolving of greases, oils, and dirt from skin surfaces. During this process the dissolving of natural oils from the deeper layers of the epidermis cannot be avoided. Rinsing with more water results in further dissolving of oils, soils, and some surface bacteria.

Relative mildness of soaps is determined by the molecular weight of the fats or oils used in their manufacture, rather than by its pH (degree of acidity). Tallow soaps (pH 10.8) are far less irritating than cocoanut or similar vegetable oil soaps (pH 9-10).

"Castile Soaps," unless specifically noted on labels, do not necessarily contain olive oils. "Super fatted soaps," which contain an excess of lanolin, cold cream or mineral oil, may lubricate dry skin. "Abrasive soaps," containing sand, grit, or pumice, as a result of removing natural oils together with imbedded soils, aggravate dry skins. The use of a wash cloth or skin brush with mild soaps is recommended instead of harsh soaps.

"Germicidal soaps" compounded with mercuric iodide or hexachlorophene aid in the maintenance of skin antisepsis. Carbolic acid (phenol) containing soaps are *less* antiseptic than the original soap materials.

Immediately after birth and during childhood, human skin is thin. It thickens during adolescence and becomes progressively thinner during middle and old age. pH range is 3.7 to 7.0 — therefore, it is important to maintain the normal "acid mantle" of epithelial tissues.

Rare as they may be, "soap allergies" do exist. In sensitive individuals, such conditions may be caused by alkalis in the soap itself or as a result of creating an alkali condition in the allergic skin. More often, reactions are caused by contained perfumes, dyes, fillers, fixatives and fatty acids.

So-called "winter allergies" on the lower legs of older patients is more often due to impaired circulation than to the use of soaps. Such conditions have been brought about by improper washing and drying practices.

The judicious use of mild soaps and water is helpful in the cleansing of scales, crusts, secretions and formerly used medicaments from the skin. However, such agents must never be used in pyeodermas (especially paronychias), excessive scaling, redness, oozing or swelling. In the latter pathologies, not only is the "acid mantle" reduced far below the point of safety, but the newly-created areas of softness allow pathogens to invade previously healthy skin areas.

Soapy solutions are of aid in the treatment of corns, calluses and nails. Not only is their treatment and removal facilitated, but deeper penetration of local medications is permitted.

In hyperhidrosis, bromidrosis, and chromidrosis, objectionable materials are, at first, removed. But, the continued use of soap-soaks have a tendency to further macerate the skin and aggravate the original conditions.

Soaps are entirely contra-indicated, in conditions of excessively dry skin, ichthyosis, radio-dermatitis and all fungus infections. In the above pathologies, dryness is accentuated, besides which, natural fatty acids (which combat these conditions) are neutralized.

Treatment of contact dermatoses and weeping eczemas is hindered by soap and water. Not only is the skin weakened by their use, but reinfections are created by spreading.

Suitable substitutes for soaps may be selected from the various synthetic detergents and soapless cleansers that are available. They do not form lather and are more expensive, but these minor shortcomings are more than offset by their safety factors.

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MEDICAL TEACHING AND RESEARCH

THE main problem in medical education everywhere is to bring about a more general appreciation of the value of teaching. Teaching is not just a bagful of technical tricks, nor is it a tiresome waste of time. It is, or it ought to be, the reverse of a coin whose obverse is research. It is true that nowadays nearly every teacher is also a research worker, but it is the research that gets the pay and the glamour. This breeds the idea that going into the anatomy dissecting room or the physiology lecture theatre is an unwarrantable interruption of important work. Until people realize that to stimulate others to find things out is as useful as to find things out oneself, and that the two jobs should go together and not in separate compartments, the teaching of basic science will remain a profession in which deficiencies will have to be patched up and mistakes made good.

D. C. Sinclair, in Lancet, Sept. 5, 1953

SILICONE CREAM* AS A SKIN PROTECTANT—REPORT

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THE silicones consist of molecular chains of alternate oxygen and silicone atoms, and differ from ordinary organic compounds in that certain carbon atoms are replaced by silicone atoms.[1]

They are chemical cousins of glass. But they represent a chemical hybrid, a cross between organic and inorganic materials. Physically, the silicone compounds are made in the form of fluids and oils, greases and compounds, resins, varnishes and rubbers.[2]

The silicones, in all forms, are chemically inert and possess unusual water repellent and adhesive properties. They have been used in weather resistant paints and to make fabrics water repellent. Since their physical properties are unaffected through a wide range of temperatures they have been used successfully as lubricants, separators, insulators, gaskets, etc., where exposure to sub-zero and high temperatures may be frequently alternated.

Recently the silicones have been incorporated in suitable bases and used as skin protectants. Their physical properties would seem to offer unusual advantages for this use. Being chemically inert, they will not mix with, or be dissolved by water, oil and most common external allergens to which the skin is exposed.

The silicone fluids are not irritating to the skin even after prolonged exposure, and there appears only a negligible possibility of sensitization from their use.[3]

Recent reports on clinical studies of the use of silicone preparations as skin protectants are definitely favorable.[4, 5]

Excellent protection obtained against dye material used in shoes, notably paraphenylendiamine, has been demonstrated.[6] That is of singular importance to us.

The present report is an evaluation of a special plasticized combination of silicone, nitrocellulose and castor oil suspended in a greaseless vanishing cream base.*

Results of Treatment

It can be readily understood from the discussion of the physical properties of the silicones that their occlusive nature contraindicates their use in acutely inflamed or infected lesions. Their singular value is as a preventative measure.

At the time this report was prepared, we had used the cream in twenty-eight cases. Each patient was instructed to apply the cream morning and night for ten days to two weeks, and then once every day or two days. It was to be rubbed in until no longer visible.

The cases and results were as follows:

I. Intertrigo—7 cases—good to excellent results in 6 cases
II. Contact Dermatitis—18 cases—good to excellent results in 16 cases
III. Varicose Eczema—2 cases—good results in both
IV. Neurodermatitis—one case—failure

*Covicone, supplied through the courtesy of Abbott Laboratories, North Chicago, Ill.

Comment

Described in a simple manner, the first group of lesions were caused by physical irritants; the second by chemical; and the third by a combination of both. The favorable results indicate the value of this preparation as an emollient and skin protectant, or separator.

In the first group, for example, a case of skin irritation on the upper calf from a gelatin cast was cleared and recurrence prevented by the use of the cream. Also included was a patient whose second toe, deformed as a sequela of a non-treated fracture, had rubbed against the shoe upper, producing an allergic skin reaction.

In the second group were a number of cases of "interdigital maceration." These are among the skin conditions commonly misnomered as "athlete's foot"; and their inclusion within pertinent statistics, result in the fantastically high percentage of "athlete's foot" sufferers that is so widely quoted.

It is our conviction that many of the seemingly recurrent and chronic cases of mycotic infections are basically a secondarily infected, allergic lesion. The very common lesion in the fourth interdigital space is the usual, initial site of a general dermal foot condition, if not the only locale. Crowding together of the toes is not noticed only in the case of the fourth and fifth toes. Nor are the other predisposing causes, usually described, peculiar to that area alone. However, it is significant that, that skin area is forced into close approximation to the lateral edge of the shoe insole, where it is unprotected by the sock lining of the shoe. It is commonly understood that any reduction of normal skin tonus may be a prelude to a subsequent fungus infection.

After acute symptoms were cleared in those cases, the use of the cream prevented the recurrence of the predisposing skin reaction from the chemicals in the leather of the shoe.

In three cases, the patients work in brick kilns, where walking surfaces are hot. The protectant served to ameliorate the severe dehydration effect that elevated temperatures have on the plantar skin.

As a matter that may be of interest, in several cases, we used a procedure (unprecedented to our knowledge) by applying the cream *not* to the foot but to the offending leather of the shoe. The results of the few cases could hardly be considered as conclusive; but the technic was effective in those instances. In two cases of the several; where unilateral, typical, acute vesiculopapular allergenic reactions were present in the medial plantar skin area; and the shoe insoles (only of the affected foot in each instance) were of the unfinished rough nature usually observed to be responsible; the silicone cream apparently "sealed" the leather insole surface. Intermittent soaks in Burrow's solution was the only therapy; there was no recurrence.

Applied sparingly, it is of practical note that the cream did not leave a sticky or greasy residue which might be disagreeable to the patient.

Results seemed to indicate that the cream was not removed by ordinary washing or bathing. The advised method of application (twice a day for two weeks, then irregularly) not only served to maintain the protective film; but is, fortunately, the most practical and physiological instruction conceivable, since it parallels the cooperation most patients extend toward prophylactic medication.

Conclusions

In a limited group of cases, Covicone cream has shown to achieve beneficial results:

1. As a mechanical skin separator.
2. To prevent skin contact with chemical allergenic substances in shoe leather or hosiery to which the patient has been sensitized.
3. It is not fungicidal or fungistatic, per se, but it has shown to achieve beneficial results as a prophylactic in control and/or prevention of the skin debilitation that is a necessary precursor to most phytotic infections.
4. It possesses all the cosmetic advantages of a greaseless vanishing cream, maintaining invisible, protective efficiency before and after washing.

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27 No. Brown St.

FEET AND DIABETES AS A HEALTH PROBLEM

WILLIAM C. SINDONI, D.S.C.*
Philadelphia, Pa.

Diabetic patients are more susceptible than normal persons to hardening of the arteries, especially those of the eyes, heart, and feet. For this reason, proper care of the feet plays a vital part in maintaining good health in diabetics. A helpful rule for the diabetic to keep in mind would be—"watch your feet."

Causes of Diabetes

Although the true cause of diabetes is not yet known, it is interesting to note that most diabetics are fat and overweight before their condition becomes evident. Excess weight is not always brought on by overeating, but overeating is frequently a factor in precipitating diabetes, as well as previously poor or inadequate diet habits.

Mental strain, excitement or worry may also help to bring about diabetes, or to aggravate the condition.

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Infectious diseases, such as influenza, pneumonia, or scarlet fever, and accidents may be responsible for diabetes. Diseases of the liver and gall bladder are frequently associated with diabetes, as are diseases of the thyroid, pituitary and pancreatic glands.

Heredity as a cause of diabetes seems to be significant, since 25-30 per cent of such cases occur within families. Some authorities claim that an excess of sugar and starch helps to bring on diabetes; others claim that it is excess protein and fat and too little sugar. Any one particular diet factor as a cause of diabetes is questionable.

Incidence of Diabetes

No person is exempt from this disease. Diabetes is widely scattered throughout all groups of workers and is quite common among mental workers—teachers, office workers, physicians, judges, lawyers, and ministers. It is believed that certain races are more prone to diabetes than others. Diabetes is probably due to sedentary habits and rich diet and the overweight condition that results, rather than to a particular racial tendency.

It is apparent that the span of life of a diabetic, as well as his freedom from some of the complications of the disease depend upon the continuation of adequate treatment. Failure of control is partially due to ignorance of the true nature of the condition and its allied complications —also, in many cases, to lack of funds with which to purchase insulin and to obtain an adequate diet and other vital facilities.

Care of the feet in diabetics, however, is a relatively simple matter. Many complications of diabetes can be avoided if the patient will observe and follow the proper care of the feet.

Clinical Evaluation of the Treatment of the Diabetic Ulcer of the Foot with Neomycin and Gramicidin with Local Application

All physicians are confronted daily with the problems of the selection of an antibiotic for a specific patient. To use these agents with the greatest efficiency and with the lowest cost to the patient, it is essential that a proper etiologic diagnosis be made and the best drugs be selected and used. This is not always an easy problem, but it is well to know the relative merits of each antibiotic.[1]

There are seven antibiotic drugs in common use today – penicillin, streptomycin, aureomycin, chloromycetin, neomysin, and gramicidin. Each one has a definite place in therapeutics. I shall begin the discussion with a few words about the common modes of administration.

Antibiotics are used in the treatment of soft tissue infections such as cellulitis, ischiorectal abscess, infected leg ulcer, acute primary bacterial lymphadenitis, acute mastitis, infected traumatic or postoperative wounds, human bite infection, gas gangrene, furunculosis, carbuncle, progressive bacterial synergistic gangrene, diabetic ulcer of the foot, etc. In lesions of this sort, staphylococci or betahemolytic streptococci are the organisms usually involved, but there may also be quite a variety of gram-positive and gram-negative bacilli. From the pharmacologic standpoint we have to consider both the systemic and local approaches.[2]

Neomycin is an antibiotic substance produced by a strain of Streptomyces fradiae. It is water soluble, basic, and relatively resistant to the

action of heat and microbial decomposition. Neomycin is not a single entity, but consists of two and maybe more, closely related chemical substances. Thus far, two of these studied and designated, neomycin A and B. Neomycin A has a potency of 1,700 units per mg. and neomycin B, as the sulfate salt, about 200 units per mg. At the present time the only chemical data available are concerned with neomycin B. The chemical structure of neomycin B has not been determined, but the purest preparations available contain C, H, N, and S. It is active against a wide variety of gram-positive and gram-negative bacteria, as well as acid-fast bacteria.[3]

Gramicidin for all practical purposes is the active principle of tyrothricin, and is almost wholly responsible for its therapeutic efficacy. Tyrothricin possesses certain advantages for topical use, namely, stability in presence of pus, compatibility with salts and ionic detergents, relatively wide antibiotic spectrum among gram-positive organisms, and lack of sensitizing properties.[4] The U.S.P. and the F.D.A. tests for tyrothricin potency both determine the gramicidin content of the preparations. Indeed, some firms now express the potency of their tyrothricin products in terms of gramicidin content.[3]

Clinical control of forty-one patients with diabetic ulcers of the foot are reported as follows:

15 were kept under control
20 were healed
6 were hospitalized for surgery

This new concept of treatment with *neomycin and gramicidin ointments has healed many of the stagnant ulcers that have remained for such long periods of time. It has also prevented many patients from occupying beds which heretofore were confined to the hospital.

Newly created ulcers caused by trauma are rapidly healed. These ulcers are kept under control without fear as long as the patient returns for routine treatments to the clinic, and follows the method of treatment prescribed for daily care at home with the use of neomycin and gramicidin ointments. The patient's confidence is restored, and better cooperation and relationship is established between patient and doctor for the saving of a limb.

Treatment

A – The patient's diabetes must be kept under control by the physician.

B – An ulcer that is found around the area of the foot should be evaluated at the time of examination, according to its location, and whether it is superficial or deep, acute or chronic.

C – The condition of the ulcer determines whether treatment is ambulatory or at bed-rest.

(a) The chronic type is usually ambulatory.

1. Use saline soaks twice daily for 10-15 minutes.
2. Neomycin and gramicidin ointment applied two or three times daily after soaking will usually cause a change in the appearance of the ulcer in a few days. It changes from a dull red to a fresh pink color. Neomycin and gramicidin

*Spectrocin (neomycin and gramicidin ointments) supplies by E. R. Squibb and Sons

ointments have evidently destroyed or inhibited the growth of many of the pathogenic bacteria. One of the chief clinical aspects of such ulcers—foul odor—is eliminated. A sterile gauze padding is used to cushion the ulcer. As the tissue around the ulcer starts to granulate, the soakings are discontinued, and only neomycin and gramicidin ointments are applied locally. Neomycin and gramicidin may be applied continuously, for sensitivity reactions with this preparation are rare.

(b) The acute type is usually at bed-rest.

1. Here the ulcer is inflamed and swollen, and drainage may be present. Infection spreads rapidly.
2. Saline compresses are applied to the infected area, and are followed by application of neomycin and gramicidin ointments.
3. When the condition of the ulcer has been checked—when its redness, inflammation, and drainage have subsided—and granulation is taking place, the patient may become ambulatory for further treatment.

Summary

1 – Neomycin and gramicidin ointments are effective against a wide range of gram-positive and gram-negative organisms.

2 – Even if rare sensitization to neomycin and gramicidin ointments should occur, patients are not denied the subsequent use of valuable oral or parenteral antibiotics for serious disorders. Why? Because neomycin is rarely administered systemically, and gramicidin, never.

3 – Neomycin and gramicidin ointments are colorless and do not interfere with the clinical aspects of the ulcer, which must be carefully observed at all times during treatment.

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Men will be listed with initials only. Given names will be used in listing women. Only one address for each member can be published.

CONTRIBUTIONS TO CHIROPODY

H. L. COLLINS, D.S.C.
Columbus, Ohio

MULTITUDES all about us are continuously trying to get the last ounce out of life without putting anything back. This certainly applies to all professions. Many men take everything they can from their profession without making a contribution to its advancement. The result, therefore, is never a happy one. Total material gain is seldom satisfactory. The old Biblical saying, "It is more blessed to give than to receive," certainly applies in our everyday lives.

There are many men in the field that have so much that they could give if they would only put forth some effort. A talk before other societies, Parent-Teacher groups, service clubs, etc. Scientific articles, outlines of new techniques in treatment are welcomed by our Journals. Our profession is woefully lacking in printed matter and material. Our younger

men and women in the field of chiropody need help and should be encouraged to practice in the best manner possible. An invitation to these younger people to attend conventions and meetings would be greatly appreciated.

Every kind and generous act, each bit of encouragement that we give others and every hopeful word uttered has its reward. It adds to life materially and you will get something better than gold in return. Every good deed is added wealth to our profession.

Our future security depends on how firmly we are organized. If we should ever become an agent under government supervision, just where we stand and how we will be recognized depends upon our organization. Public opinion is one of the most powerful influences in regulating our practices. It also regulates our government. The year of 1954 will present many new problems. Let us face them courageously. We must work together in harmony for one common cause, that is the advancement of a well organized and harmoniously conducted profession.

318 East State Street

THE DENTAL PROFESSION VIEWS THE POTENTIAL OF CHIROPODY*

VICTOR H. DIETZ, D.D.S., Ph.D.
St. Louis, Mo.

I HAVE followed the progress in the field of chiropody for the past twenty years. Occasionally a professional man, active in one of the healing arts anatomically set apart from your particular field, grasps certain impressions not apparent to those individuals immediately within the practice of the art and science of modern chiropody.

My early respect for the potential of chiropody came about by the thorough perusal of the inspirational writings of Nicholas Von Schill. It was twenty years ago, through these writings, that I realized chiropody was inexorably destined to become the "third healing art." Chiropody is preceded only by the parent organization—medicine—and the highly specialized branch thereof—dentistry.

Chiropody, Dentistry and Medicine form the triumvirate adminstering precisely, ethically, and logically to the host of ailments that befall modern man from "the epicranial aponeurosis to the cutis plantaris."

Why is this true? Namely, because in a practical vein, there is every justification for chiropody. The field is requisite to the foot-weary public. Nobody can care for the numerous maladies—from the treatment of simple helomata to the excruciating hallux valgus that befall the human foot as can the chiropodist.

The National Association of Chiropodists under the brilliant leadership of Dr. Stickel is performing a heroic task on the national level. The JOURNAL, has within the last decade, vastly improved. However, in essence, it must ultimately desist from riding on the coattails of medicine

*Condensation of an address delivered at 1953 meeting of the Missouri Association of Chiropodists.

and dentistry in order for chiropody as an important, ethical, and essential profession to gain its ultimate full stature.

Chiropody must develop its own outstanding leaders in research. Recently graduated students should reverse the academic schedule and upon having been awarded the D.S.C. should go back to college and finish the requirements for the bachelors, masters, and even the Doctor of Philosophy degree in an allied biological field. This brings us down to the local level and where you as individuals fit into the picture. The picture is a simple one. During the first few years of practice the chiropodist, or any other professional man for that matter, is not so busy that such a program could not be undertaken. However, it requires additional years of toil and studious application. And, nevertheless, such an ultimate achievement benefits not only the individual, but chiropody in the long run.

I was delighted to see that the Reserve Officers' Association just recently urged the inclusion of chiropodists in the Medical Service Corps of the Armed Forces. While such action is favorable, it really accomplishes nothing. The arguments against the inclusion of chiropodists are vapid, inane, and biased. Definite action should be taken. Chiropody requires no defense; other so-called healing arts really do. This assertion may be based on four criteria:

1. Is there sufficient demand for chiropodical services? Yes.
2. Does the field justify specialized individuals? Definitely.
3. Can chiropody justify itself as a profession? Undoubtedly.
4. Does it constitute an encroachment upon the field of medicine—obviously not, except in rural areas where no chiropodist may be available. Any physician who has to rely on clumsily treating the foot should seek some other occupation.

Chiropody, like dentistry, is highly specialized. There is no substitute for detailed study, practice and experience. Chiropodists need feel no professional inferiority—the profession is definitely on the forward march! Be sure that you as individuals march with it. I would dare at this juncture to predict "things to come in chiropody."

1. Subspecialization in the field of chiropody similar to dentistry which now recognizes seven specialties.
2. Chiropodists must streamline their practices—utilizing three or four operating rooms with the necessary auxiliary help to increase efficiency and economy.
3. More emphasis will definitely be placed on beauty, function or both. This feature naturally has patient appeal. Relief of distress is not enough. Prophylactic foot and leg care will ultimately make the public chiropody conscious.
4. Chiropodists will establish group practices or become associated in practice—this policy possesses many economical advantages and permits more free time and leisure.
5. Chiropodists having an assistant who is trained as an electrologist will find that she will not only pay for herself but actually enhance the practice volume.
6. Discriminations against chiropodists in professional buildings will ultimately crumble.

From the modern origin of your profession ("Chiropodologia," D. Low, 1768) chiropody has made remarkable advances, but it still has a long way to go. However, the time is not too distance when medicine, dentistry, and chiropody will join hands with a feeling of mutual respect and form a sound ethical triad through which future health services will be made available to all mankind.

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Members who desire to submit papers should make application on a form which can be obtained from the Executive Secretary. The rules for the 1954 awards are published in the July, 1953, issue of the Journal of the N.A.C.

Research papers on any subject in the field of Chiropody may be offered. The final date on which papers will be accepted is April 15, 1954.

HELP FROM THE PAST

In the study of some apparently new problems we often make progress by reading the work of the great men of the past.

C. H. Mayo, "Surgery of the Sympathetic Nervous System," Annals of Surgery 96:481, October, 1932

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A NEW DRUG AND TECHNIQUE IN THE TREATMENT OF CHRONIC HELOMATA

SAUL SHAFRITZ, D.S.C.
Washington, D.C.

THE administration of a new drug by subcutaneous injection was successfully employed in clearing up a chronic, intractable heloma durum with an underlying inflamed bursal sac. The fifth toe of the left foot which was involved for approximately ten years was restored to complete normal appearance and function.

The drug is called Kutapressin,* a sterile aqueous solution of the selective vasoconstricting principle isolated from liver. Laboratory and clinical studies indicate that it causes a constriction of the terminal arterioles and capillaries, specifically in traumatized areas. It does not affect the systemic blood pressure. The preparation is useful in a variety of skin disorders in which cutaneous vasodilatation and increased capillary permeability are important factors. By causing cutaneous vasoconstriction and restoring normal permeability to the capillaries, hemostasis and local passive congestion are overcome, circulation in the affected area is improved and better tissue metabolism and tone follow. Thus the tissues are better able to combat local infection and inflammation. The product is given either intramuscularly or subcutaneously, but in the technique described later, the subcutaneous route was used exclusively.

The patient, Mrs. A. Y., age 29, a registered graduate nurse by profession, had undergone an intensive series of treatments for pes valgo planus of the flaccid type. Short wave diathermy, sinusoidal currents, strappings, followed by moulded prosthetics and prescribed shoes were carried out over a period of four months. All weak foot symptoms subsided except the fifth toe heloma which persisted with periodic regularity like a defiant thorn. A latex shield was then made but to no avail.

On the theory that chronic recurring helomata is primarily due to the dilatation vascular elements with increased capillary activity and nutrition to the toe, the medicament seems to be an ideal drug to counteract the vasodilatation and control local circulation and nutrition.

Following discussion of the physiological action of the preparation with the patient, a definite course of injections was recommended. Surgical intervention had been proposed previously but pressing professional duties ruled out that approach for a time. Mrs. A. Y. consented to try the injection therapy.

Twelve injections over a period of two months were administered. The average dose per injection was between 1.5 cc. to 2 cc. A total of 20 cc. (approx.) was administered. Three injections were given the first two weeks, two injections a week the next two weeks, and the last two at two-week intervals.

Mode of administration was local and subcutaneous. A ¾ inch No. 23 gauge needle was used, inserted at about the head of the fifth metatarsal dorsally toward the fifth toe with the drug gradually infiltrated beneath

*Manufactured by Kremers-Urban Co., Milwaukee, Wis.

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the skin. Two injections were made into the base of the affected toe after which Mrs. A. Y. experienced the only side effect during the entire series of treatments. This consisted of an intense itching which persisted for about two hours and gradually subsided. All other injections were made about the fifth metatarsal head. No cutting or shielding was performed during this procedure.

The results of the above therapy were as follows: After the second week of treatment, there was a definite decrease in the underlying inflamed bursal sac. By the end of the fourth week, the sac was about one quarter its original size; the typical nucleus of the heloma, which always recurred after four weeks, was faintly discernible and a scant callous remained. After the second month there still persisted a little callous but the shape of the toes was completely normal, no enlarged sac or nucleus present. At this writing, going into the fourth month, there is barely a trace of any lesion or recurrence.

This vasoconstrictor may open some interesting possibilities as a new agent in the treatment of chronic and stubborn skin lesions of the lower extremities. Further investigation of its field of usefulness should be pursued.

901 20th St., N. W.

PRINCIPLES OF SURGICAL TRAINING

It must be freely admitted that few hospitals are so fortunately situated as to be able to satisfy our highest ideals for surgical training. It must also be admitted that without dedication to the correct principles a successful program cannot be achieved. We must, therefore, make our first tenet acceptance by the hospital staff and administration of the principle that the training program is to be geared to the trainee and that service to the staff and the hospital is secondary. This philosophy must be accepted if exploitation of residents is to be avoided. Not that training and service are incompatible; quite contrariwise they are actually complementary. The resident who is receiving an excellent training becomes a loyal and conscientious member of the team, while his contemporary whose days are so filled with retractor holding, record making, and routine care that he has no time to think is a doubtful asset to any institution. Furthermore, unless the principle is embraced by all who have a part in the program, conflicts are inevitable.

M. Glover, Surg. Gyn. Obs., Oct. 1953

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VARICOSE ULCER THERAPY

S. L. PERLMAN, Pod.D.
New York, N. Y.

THIS paper offers a brief description of the management of varicose ulcers. In all cases compression treatment is essential. The ulcer is debrided, painted with tincture of merthiolate, sprinkled with terramycin powder with Polymxin B. Sulfate, and a sterile gauze pad is placed over the whole area. A sponge rubber "heart" (a piece at least one inch larger than the ulcer's diameter is beveled on the edges and applied over it) then, from behind the first and fifth metatarsal heads, gelatin and zinc oxide impregnated gauze is wrapped (3 inches by 10 yards) up to the head of the fibula. Over this an elastic adhesive bandage is wrapped to include the whole area covered by the gauze bandage (including the heel). Bandages are changed every five days until the edges of the lesion epithelize after which changes are made every week to ten days. The greatest percentage of area covered by healthy skin will be observed after the application of the fourth or fifth bandage. Another thing that hastens healing is the terramycin powder and the additional pressure of the half inch sponge pad.

To be able to determine progress without a photographic record, I clear old x-ray film by pouring hot water on it and scraping the emulsion off both sides. This is then cut into pieces 2½″ x 4″ (8 pieces from an 8″ x 10″ film). The piece of film is put over the debrided ulcer and an arrow is scratched on the film to denote the position of the knee. This is important in subsequent orientation of the films. The outline of the ulcer is then scratched on the film. The name of the patient and the date complete the record. As healing is completed, invaginations of epithelized areas occur and eventually show one or several islands not fully healed. At this time broken lines are scratched on the film to designate the area of the original ulcer. Many patients are delighted to see improvement in the ulcers which have been open and draining for as long as twelve years.

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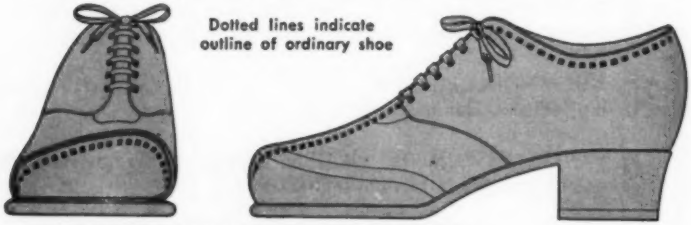

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CHIROPODOLOGIA

In 1768, Dr. D. Low specialized in the care of the feet and practiced on Davies Street, W., London, England. He designated himself a "chiropodist" and in 1774 published a book entitled "Chiropodologia, a Scientific Enquiry, into the cause of Corns, Warts, etc." This volume is being reprinted in serial form because of its historical interest to members of the profession.

CHAPTER XV—OF THE DEFECTS IN THE CONFORMATION OF THE TOE-NAILS: AND OF THE ACCIDENTS TO WHICH THEY ARE EXPOSED

THE nails of the toes are commonly more thick than those of the fingers. This is the only circumstance in which they differ from each other materially; but it is a circumstance which nature has widely ordained, inasmuch as the superior thickness of the toenails serves greatly to fortify the foot in walking, and to guard it against external injuries.

The reason why the nails of the feet thicken with so much more ease than the nails of the hands, is, that the juices which contribute to the growth of the former, are necessarily, from the very situation of the parts, more copious.

One of the principal faults in the conformation of the toenails, is their tendency to penetrate, in an angular direction, into the circumjacent flesh. There are some nails also which, instead of following the level of the skin, become more prominent as they grow. Others there are which, however well formed originally, acquire at length so extraordinary a degree of thickness, that no scissors will cut them; and not a few are there which, possessed of no determinate form, can hardly be considered but as mere callous substances. It often likewise happens that the nutritive juices, after their afflux to the toes, being impeded in their proper office of contributing to the growth and formation of the nails, stagnate in their angles, or at their extremities, and become at length so putrid, as well as viscous, underneath, as to make them perish, and fall off insensibly.

Such are the principal defects that relate to the conformation of the nails of the toes. With respect to the injuries to which they are subject independently of their conformation, little needs to be said. These are, in fact, reducible to two heads; namely, the damage they may sustain from the fall of a heavy weight upon them, and that which may ensue from their having violently hit against a stone, or other hard body, whether in walking or running.

In the former case, it is rare that the accident, when violent, is not followed with a loss of the nail; because the blood, necessarily extravasated beneath, forms a painful fermentation, which, terminating frequently in an inflammation and swelling of the whole toe, creates an unsufferable anguish to the patient. When it is more mild, however, the only mischief is an ecchymosis, or a deposit of blood under the skin, at the root of the nail.

In the other case—that is, when the nails have received a casual injury in walking or running—we seldom find all the toes affected. It is the

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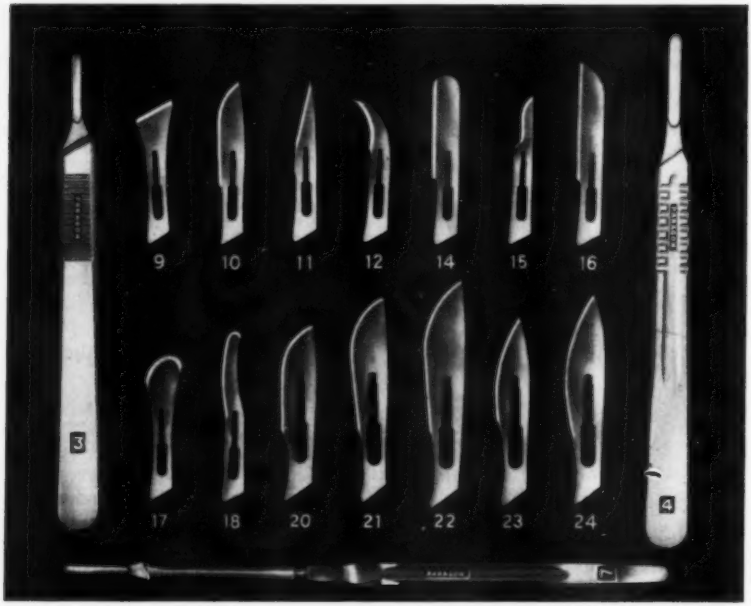

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great toe alone which suffers; and though thereby, in very bad cases, a loss of the nail might follow, yet a new one would soon spring up in its stead.

In collisions of this sort, the more slender the nail is, the less resistance it makes; and therefore only a few of the laminae, of which it is composed, will be loosened from the root. But those laminae, rendered incapable by such accidents of contributing to the formation of the nail as usual, will afterwards grow beneath it; and, instead of preserving their common flat figure, they will assume a pyramidal one, and often produce no small degree of pain to the patient, without discovering any unusual appearance externally. By such shocks even the stoutest nail may sustain a disunion of all the laminae that enter into its composition. In this case, the nail changes its form entirely. It ceases to grow in length, but increases so much in bulk, that I have actually, from this very cause, seen a toenail as big as a filbert.

In general, the accidents which befall the nails of the toes are exceedingly painful; but, if speedily and skilfully attended to, there can be no doubt but that they may be cured with perfect ease and safety.

THE MAJOR DETERMINANTS IN NORMAL AND PATHOLOGICAL GAIT

HUMAN locomotion is a phenomenon of the most extraordinary complexity. Although the primary objective of locomotion may be simply stated as the translation of the body from one point to another by means of a bipedal gait, its analysis requires the collection of an enormous amount of data in order to follow the entire cycle of events. It is evident that a complete description of locomotion involves consideration of both the kinematics and kinetics of the extremities in all their manifold details.

Data which presented the analysis of the fundamental determinants of gait was obtained with the aid of a variety of technics. Since a study of locomotion involves the recording and the measurement of the magnitudes, directions, and rates of change of the translations, rotations, and forces occurring in the body with respect to the three coordinate axes in space, the displacements of the extremities were determined by several methods. One of these consisted of a glass walkway which permitted the study of the displacements in the three planes of space simultaneously. By measurement of the displacements as a function of time, the velocities and accelerations of selected points were calculated. Displacements in the sagittal plane were also obtained by an interrupted-light technic. This method permitted the calculation of the components of velocity and acceleration in the plane of progression with great accuracy. Electrical accelerometers were used to check the findings, but were found to be inferior to methods of grapho-numerical differentiation. The transverse rotation of the limb segments were most accurately determined by the insertion of pins into the bones. High-speed motion-picture photography proved to be of qualitative value only, but it was useful for the examination of motion of minor magnitude. In some instances, cineradiography had a limited usefulness. The gravitational and muscle forces were studied by means of electromyography and by the use of

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force plates. Electromyography was most valuable in determining the precise phase of muscle activity. The force plate allows the direct measuring from the ground reactions of the magnitudes of vertical force, torque, and horizontal shears, as well as the center of pressure on the foot. In addition, special technics were used to determine the physical constants, such as the centers of gravity, the relative masses of the segments, and the calculation of the mass moments of inertia. The data presented were for level walking at the cadence normal to the subject investigated.

Locomotion is the translation of the center of gravity through space along a pathway requiring the least expenditure of energy and supplies the necessary unifying principle which permits qualitative analysis in terms of the essential determinants of gait. The six major determinants are pelvic rotation, pelvic tilt, knee and hip flexion, knee and ankle interaction, and lateral pelvic displacement. Pathological gait was viewed as an attempt to preserve as low a level of energy consumption as possible by exaggerations of the motion at unaffected levels. Compensation is reasonably effective with the loss of one determinant of which that at the knee is the most costly. Loss of two determinants makes effective compensation impossible and the cost of locomotion in terms of energy is increased threefold with an inevitable drain upon the body economy.

J. B. Dec.; M. Saunders; Verne T. Inman, and Howard D. Eberhart, J. Bone & Joint Surg. 35:543 (July) 1953.

RELATION OF PHYSIOLOGIC AGING TO PHYSICAL MEDICINE

MANY physiologic changes take place as one advances in years. These changes should be borne in mind when physical therapy is employed. It has been said that what will cure the young may kill the old. The aged tissues will not always stand vigorous therapy. Therefore, "half treatments" are often sufficient. When the patient does not respond to therapy, a decrease rather than an increase in the dose is often indicated.

The normal physiologic modifications inherent to the aging process vary in different persons. Sometimes these appear early in life; sometimes late.

Therapy, whether by means of ultrasonic waves, diathermy, heat or massage, should be gentle in senescent patients.

Malford W. Thewlis, Journal of the American Geriatrics Society, 1:671 (Oct.) 1953

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Orders for reprints must accompany manuscripts. Authors should state quantity desired at the time paper is forwarded to the Journal.

Manuscripts must be typewritten, double spaced, and an original copy must be submitted. Reference should give name and initials of author, volume, page, month and year of publication in the case of periodicals, and publisher and place and year of publication in the case of books. Illustrations must be clear photographs. Glossy prints are preferred. Drawings must be made in black ink on heavy paper or cardboard. Any illustrations should bear the author's name and be numbered in the order in which they are referred to in the text. Illustrations must not be pasted on the manuscript. Legends should be placed on a separate sheet. Tables are not illustrations and should be numbered separately.

ABSTRACTS AND HEALTH NEWS

STERILIZATION OF SURGICAL INSTRUMENTS

Question: For years our community hospital has sterlized surgical instruments in metal pans with loosely fitting lids. Disk indicators placed inside the trays indicate complete sterilization. Recently, a new surgical nurse made the statement that, because the lids were on the trays during the autoclaving, the instruments could not be considered sterile. Is there any validity to this nurse's contention?

This inquiry was referred to two consultants, whose respective replies followed.

Answer: This nurse's contention definitely is not valid. For the usual times and temperatures of autoclave sterilization, it is essential that the material to be sterilized be exposed to saturated (wet) steam, and the attainment of a given temperature alone is not sufficient. A loosely fitting lid would not, however, interfere appreciably with the penetration of steam under pressure to displace contained air to reach the conditions required for autoclave sterilization.

Answer: The microbicidal power of steam develops when the steam contacts a colder object and gives up enough latent energy to heat the object to the temperature of the steam. The condensate that results wets the colder object. Two of the three requisites for rapid sterilization, temperature and moisture, are thus present simultaneously. The third factor, period of exposure, varies with the temperature of the steam. Clean, dry, heat-resistant spores are destroyed by 13 minutes' exposure to saturated steam at 250 F (121.1 C) (15 lb. per square inch). Two minutes suffice at 270 F (143.3 C) (27 lb. per square inch). Mechanical contact between moist heat and bacteria is essential. In the case of instruments, with which sterilization is a surface phenomenon, the entire surface must be wet as the instrument is heated. Grease and oil soiling the instruments prevent access to the surface by the steam. Tightly opposed surfaces, as in jaws or catches, may remain dry and, hence, require prolonged exposure for sterilization by dry heat (four hours at 250 F). Hence, instruments must be clean and their locking parts loose for reliable sterilization by steam. Air is trapped in the hospital sterilizer when the door is closed. Because it is denser than steam it pools in upright vessels and at the bottom of the sterilizer, preventing mechanical contact of the lighter steam, which layers on top, with objects to be sterilized. An air ejector at the lowest point of the sterilizer permits the air to spill out. A horizontal path must be provided for lighter steam to displace the heavier air from vessels in the sterilizer so that it can contact, heat, and wet their contents. Lids that fit tightly and the upright position of the vessel interfere with the gravity convection of steam into the vessels and the development of moist heat in the contents. Heating that ultimately occurs owing to conducted or radiated energy is dry, and more prolonged exposure is required than when moist heat is the microbicidal agent. Quantitatively, the problem of how much steam is necessary for sterilization resolves itself into a problem of the size, shape, and contents of a

vessel. It takes the latent energy in exchange of air and steam reliably. In routine sterilization, however, better control and increased reliability result from the established rule that dry vessels must be placed on their sides to provide a horizontal path for the escape of air.

A shallow tray with a poorly fitted lid might permit this 865 cc. of steam to heat a size 6½ rubber glove to sterilizing temperature. One cubic centimeter of moisture is deposited on the surface of the glove as a result of the energy exchange.

J.A.M.A., April 18, 1953.

THE POWER OF BELIEVING

PEOPLE are individuals, with different ways of attaining their objectives. They interpret success differently. Thus, there is no common way to achieve the goal, no pat and perfected formula. But there is one common quality which all successful men—whether in business or any other field of endeavor—seem to possess. It is the ability to believe unflinchingly in the work they are doing. And because they believe in their work, their lives are sharply focused upon it—even to the extent of dimming all other things. The executive who develops an earnestness about his work—without becoming pompous or over-zealous—who believes that his work is worthwhile and significant, is usually the one who accomplishes the most, and thus achieves the most success. By believing in what you are doing, you find that you possess a fathomless reservoir of strength for carrying out your work. Belief in your job will not produce miracles; it is not even guaranteed to produce results in all cases. And believing in what you are doing is not necessarily simple or easy; in fact, it may be the most difficult thing in the world for you, especially if yours is not a so-called "big job" with a lot of prestige, or if it is not particularly interesting. But if you can develop this belief in your work, it will probably self-perpetuate itself, and you will find that you are working with increasing enthusiasm. For all of us, the chances of success are different. Some have better odds than others. Regardless of what the odds are in your case, a strenuous, dynamic belief in the task you have taken on as your life work will greatly enhance your chances of success—maybe by 50% or more.

Editorial in Office Executive, November, 1953.

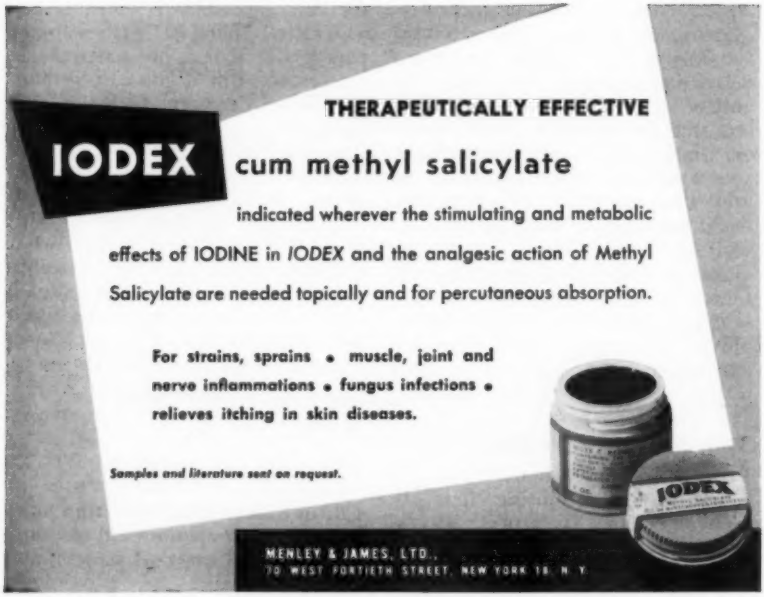
FEAR VS. ANXIETY

LET us differentiate fear from anxiety. Fear is the emotional response to recognized external danger and is accompanied by physiologic changes. Anxiety is the emotional response to partly or wholly unrecognized internal danger and is often accompanied by physiologic changes. Fear and its accompanying physiologic alterations constitute a reaction designed to meet the external threat.

Henry P. Laughlin, M.D., in Medical Annals of the District of Columbia.

PAINFUL TOE

QUESTION: A 52-year-old man has had severe pain in the medial aspect of the dorsum of his right big toe for one year. It is most annoying during the night, preventing him from sleeping. No sensory changes or evidence of a lesion of the toe are present. He gives a history of treatment for syphilis 10 years ago. A blood Kahn test gives a positive reaction at 1:4 dilution. Neurological examination shows no abnormality. Division of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a portion of the digital nerves to the toe on the dorsum of the foot relieved the pain for a week. The patient is receiving penicillin for his syphilis. Is the pain a manifestation of syphilis? If not, what cause and what treatment are suggested?

ANSWER: The only lesion of syphilis that is suggested by nocturnal pain in the big toe is a lesion involving the metatarsal or phalangeal bones. If a roentgenogram shows syphilitic periostitis or osteitis, the diagnosis should be obvious. Other possibilities are gout and rheumatoid arthritis. Pertinent laboratory tests for these two diseases, including determination of the blood uric acid level and the corrected erythrocyte sedimentation rate, should be done. A remote possibility would be diabetic neuritis; to exclude this, the urine should be examined for sugar, and a fasting blood sugar level determination should be done. Finally, if no adequate medical cause is found for this complaint, the possibility of anterior metatarsalgia must be considered.

MEDICAL SCHOOLS

Of the nation's 79 medical schools, 73 are four-year schools awarding M.D. degrees; six are medical basic science schools awarding no degree. All but nine are attached to universities. Forty-one are privately supported, and three are municipally supported. They are located in 56 cities in 37 states and the District of Columbia. Eleven states have no medical school. Student bodies in the four-year schools range from 181 to 713; in the two-year schools from 48 to 118. Six per cent of the students are women.

The Medical Advance, 1:10, October, 1953.

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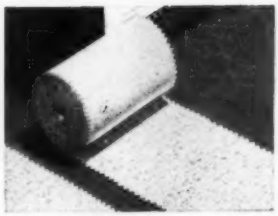
DIAGNOSIS AND MANAGEMENT OF CHRONIC PERIPHERAL ARTERIAL INSUFFICIENCY

The authors suggest a regime of therapy which they have found quite successful in the conservative management of chronic peripheral arterial insufficiency. It is evident from the literature that no single agent has been uniformly consistent in producing the desirable effect of increased blood flow to the extremities. There are a well-known number of general therapeutic measures which are important. It is quite well agreed that tobacco in any form must be absolutely prohibited for successful results in the management of thrombo-angiitis obliterans. The use of proper clothing is stressed. The control of infection and of diabetes when present is a basic principle known to everyone who treats peripheral occlusion vascular disorders. The use of bed rest is highly effective in patients who complain of severe pain at rest or during a short walking distance and those with trophic changes such as ulcerations, blebs or gangrene. The environmental temperature is maintained at 85 F. at which temperature maximum vasodilatation seems to occur. Activity in bed is encouraged to avoid the hazards incident to two to three weeks of bed rest. Buerger's exercises are recommended to improve circulation with the exception that local heat is not applied to the legs



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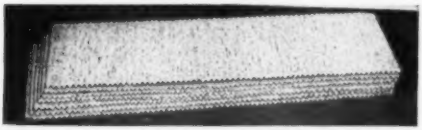

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while in the resting horizontal position. Neu and Reedy prefer to use reflex heat by means of electric heating pads or hot water bottles to the abdomen. The heating mechanism is maintained during the complete exercise period. The use of heat to the extremities is interdicted because of the practical problems of securing absolutely controlled temperatures. If this could be assured then local measured heat would be acceptable. The vasodilatating agents chiefly used by these authors in the past several years have been Priscoline and whiskey, often prescribed concomitantly during the same day. The authors feel that the problem of peripheral arterial insufficiency will become more common, and that the diagnosis of this condition can be made accurately by simple measures in the great majority of instances. Success should not depend upon a single agent for treatment, but emphasis should be upon the employment of a regime of useful measures which can add comfort and perhaps years to the life of the patient.

J. Iowa M. Soc., Oct., 1951

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ACCESS TO GOOD HEALTH

IT would be absurd to oppose the concept that access to good health is among the rights of the citizenry. But as a "right" we have the obligation (to ourselves and the American public) to see to it that medical service is placed in its proper position in the order of the necessities and the privileges of life. It is important that we separate the increasing interest of the layman in what he considers his problem of obtaining medical service from the political use or perversion of that interest. If we fail to do this, having now countered the attempt at the political capitalization of that interest, we shall not recognize our shortcoming in the next or present phase of the problem. The attitude of the intelligent layman of today reminds one of Clemenceau's remark during the negotiations after World War I. "War is too important to be left only to the generals." And is it necessary, before such a group as this, to labor through a repetition of the logic involved in the statement that this layman's interest has developed largely as an economic problem of availability of medical service from the standpoint of both access and costs?

From "Rededication," by John P. Bowler, M.D. in New England J. Med., December 3, 1953

ORGANIZATION NEWS

MINNESOTA

A REGULAR meeting of the Minnesota Association of Chiropodists was held February 14, 1954, in Minneapolis. Dr. C. L. Moon lectured on "Latex Appliances" and Mr. Philip Klein, an attorney, spoke on "Interpretation and Scope of the Law in Relation to the Compensation Act."

Drs. Edward Tarara, Adams and Sabann outlined the program for the state convention which will be held in Rochester, Minn., May 8-9, 1954.

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ILLINOIS

At a meeting of the Illinois Association of Chiropodists held January 20, 1954, Dr. Robert Addison, orthopedic surgeon, lectured on the interpretation of deep and superficial reflexes of the lower extremities. At the February meeting of the Association, a panel composed of representatives of the Illinois Interprofessional Council discussed the purposes and benefits of interprofessional relations.

The Quad-City Chiropody Association met in Moline on January 30, 1954. Dr. George Cunnan presented a film furnished by the N.A.C. The following officers of the group were elected: President, Dr. R. E. Holdeman; Vice President, Dr. John Korn; and Secretary Treasurer, Dr. Mark Buckrop. At the February meeting, Dr. E. S. Thompson showed the film entitled, "Chiropody as a Career."

CONNECTICUT

The Connecticut State Chiropody Society will hold their annual Scientific Symposium on May 23, 1954, at the New Haven Medical Association Library, 364 Whitney Ave. The sessions begin at 10 A. M.

MASSACHUSETTS

Dr. Sidney G. Holmes, Executive Secretary of the Massachusetts Chiropody Association, recently reported that the new organization plan adopted by the group is successfully functioning. The State Council meets monthly, the House of Delegates annually in October, and each of the six divisions meet monthly. Each division elects officers and forwards reports to the Executive Secretary who, in turn, submits a composite report to the Council each month.

NEW YORK

A regular meeting of the New York County Division of the Podiatry Society of New York was held at Hunter College, January 19, 1954. Dr. Charles Krausz of Philadelphia presented an illustrated lecture on "Nail Disorders."

PENNSYLVANIA

Lackawanna Division

The Lackawanna Division presented a scientific program in Scranton on March 28, 1954. Dr. R. K. Locke was the featured speaker. Other lecturers who have recently appeared before the group

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are: Drs. T. A. Engle, Philadelphia, Pa.; Ralph Orr, Erie, Pa.; and W. B. Ignatoff, Newark, N. J.

Officers of the Lackawanna group are: President, Dr. A. Gross; Vice President, Dr. F. Grogan; Secretary, Dr. J. Schectman; Treasurer, Dr. R. Noyes.

North Philadelphia Division

The regular meeting of the North Philadelphia Division of the Chiropody Society of Pennsylvania was held on January 12, 1954, at the Hotel Essex. Dr. Marie De Feo presented an illustrated lecture on "Use of the Galvanic Current in the Treatment of Verruca."

Western Division

The Western Division of the Chiropody Society of Pennsylvania held a regular meeting in Pittsburgh, February 11, 1954. Murray B. Ferderber, M.D., of the University of Pittsburgh, lectured on "The Relation of the Aging Problem to Chiropody." The following speakers participated in a scientific meeting held by the group on March 28, 1954: Drs. W. B. Ignatoff, Harry I. Miller, R. Dickson and C. V. Rossi.

OHIO

THE Ohio Chiropodists Association (N.A.C. Region Four) will hold its annual convention, May 14-16, 1954, in Cincinnati at the Netherlands Plaza Hotel. The following program will be offered: "Diagnosis and Treatment," Dr. Marvin Steinberg; "New and Practical Variations of Latex Appliances," Dr. Sidney Sivitz; "Office Economics," Dr. Charles Turchin; "Orthopedic Therapy and Management," Dr. Richard O. Schuster; "Injection Therapy," Dr. Fred Arst.

Dr. R. H. Henn of Cincinnati is serving as Convention Manager for the event.

A.C.S.L.V. ELECTS OFFICERS

THE American Chiropodical Society of Low Voltage met recently in New York City. Officers elected are as follows: President, Dr. Leon Brandolph; Vice President, Dr. Harry Tarnoff; Vice President, Dr. Sidney Sivitz; Secretary-Treasurer, Dr. H. E. Fiske; Custodian, Dr. Walter Tresky. The next annual meeting of the group is scheduled to be held in Philadelphia.

IOWA STATE BOARD DATES

THE Iowa State Chiropody Board announces that examinations will be held at the State Office Building in Des Moines, June 7-9, 1954. For information, write to Dr. Ralph C. Kirkwood, Secretary, Kresge Building, Des Moines, Iowa.

A.S.C.R. SYMPOSIUM

THE American Society of Chiropodical Roentgenology conducted a symposium, January 24, 1954, at the Waldorf Astoria in New York. The following program was presented: "Roentgenological Interpretations of Calcaneal Problems," Drs. R. K. Locke, G. Hoag, L. Kurzrock; "A Roentgenological Evaluation of Lower Extremity Posture Problems," Robert R. Rosenbaum, D.O.; "Roentgen Interpretations and Differential Diagnosis of Neoplasms Occurring in the Bones of the Lower Extremities," Charles Gottlieb, M.D.; "Shadows That Confuse," Dr. Sandor Silver; "Influence of Metabolic Disturbance Upon the Radiographic Appearances of Bones of the Feet," Dr. Albert Pincus.

Co-chairmen of the sessions were: Drs. Joseph W. Healy and Joseph W. Gilden.

NEW MEXICO

THE New Mexico Association of Chiropodists held a regular meeting in Albuquerque on January 30,

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1954. The following officers were elected:

President, Dr. E. Lenore Morris
Vice President, Dr. Miller Lane
Secretary-Treasurer, Dr. I. Michael Gross
N.A.C. Delegate, Dr. Morris Haas
Members, Executive Board: Dr. Paul Stevens and Dr. Milton M. Goodman

NEW JERSEY SOCIETY OFFERS POST-GRADUATE COURSE

THE New Jersey Chiropodists' Society has offered its members a postgraduate course in chiropodical medicine, extending from March 3 to May 19, 1954. The course was arranged with the cooperation of staff members of the Jersey City Medical Center, where the program is being conducted. The following speakers will be presented:

"Introductions" – Jack Horwitz, D.S.C.; Jonas Morris, D.S.C.; Thomas J. White, M.D.

"Modern Management of Dermatophytosis"–Meyer Smith, M.D.

"The Local Treatment of Vascular Disease in the Foot and Leg"–Nathan Frank, M.D.

"The Local Treatment of Congenital Deformities" – Marshall Bergen, M.D.

"The Art of Writing a Prescription" – R. Raymond Ricciardi, Ph. G.

"The Use of Antibiotics and Hemotherapeutic Agents in Localized Infections of the Foot"–Clifford Blasi, M.D.

"The Local Treatment for Arthritis of the Foot and Ankle"–J. Krevin Leir, M.D.

"The Roentgenographic Differential Diagnosis of Arthropathies of the Foot and Ankle"–Harry J. Perlberg, Jr., M.D.

"The Local Management of Diabetic Pathologies of the Foot and Ankle"–Jacob C. Fineberg, M.D.

"The Relationship of Foot Pathology and Low Back Pain"–Gerald L. Winokur, M.D.

"The Interpretation of Neurologic Findings in the Foot and Leg"–Robert Stockfish, M.D.

"Symptoms of Vitamin Deficiencies Found in the Foot and Leg"–Elmer L. Sevringhaus, M.D.

"Neurologic Disease Symptoms Found in the Foot"–Frederick E. Valergakis, M.D.

"Rationale of Treating Dermatological Lesions of the Foot with X-Ray or Radium"–Leo Horowitz, M.D.

"Local Treatment and Differential Diagnosis of Common Dermatological Pathologies" – John T. Higgins, M.D.

"Interpretation of Laboratory Findings"–Carrol M. Leevy, M.D.

"The Use of Narcotics, Sedatives, and Hypnotics for Pathologies of the Foot and Ankle"–Harold C. Benjamin, M.D., and Reginald Farrar, M.D.

"The Local Management of Ankle Edema" – Richard J. Lempke, M.D.

"Management and Diagnosis of Lesions of the Foot"–M. H. Holland, M.D.

"The Treatment of Dermatological Lesions Based on the Type of Skin Pathology Present"–R. J. Doran, M.D.

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WOMEN'S AUXILIARY

THE N.A.C. Women's Auxiliary announces that several requests have been received regarding organizing local chapters in various parts of the United States. Mrs. Julius Koors of New Jersey and Mrs. Pat Eads of California have applied on behalf of groups desiring affiliation. Another new group has been formed in the Sacramento, Calif., area.

Mrs. Laurence Ducote of Lake Charles, La., reports that she is selling garlic plants as part of her talent project. The Northern California Division Auxiliary is raising funds through a raffle held at each meeting—the gift being furnished by the hostess. A "name your game" evening has been planned by Mrs. Miriam Shor and Mrs. Miriam Aronow of the Southern California Division Auxiliary. The affair will be held at the home of the latter and will feature a chuck wagon dinner.

Mrs. Peggy Kinkella, President of the Long Beach California Auxiliary, announces that a very interesting program is being arranged to entertain the ladies at the coming state convention which will be held in Long Beach, May 29-30, 1954. All California members are urged to attend.

The Southern California group have made extensive plans to participate in Foot Health Week, May 14-21, 1954. The Cleveland, Ohio, Auxiliary held a pot luck supper recently at the Recreation Hall of the Ohio College of Chiropody. Southern California ladies and their husbands were recently entertained at a social pot luck supper and white elephant sale at the home of Mrs. Velma Criswell, President of the Division.

Miriam Shor, Secretary-Treasurer
N.A.C. Women's Auxiliary

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DEATHS REPORTED

Ernest G. V. Runting, F.Ch.S.
London, England

E. G. V. Runting, the dean of the profession of chiropody in Great Britain, passed away on January 16, 1954. He was born in 1861 and obtained his chiropodical training from his mother. His grandfather also practiced chiropody.

Mr. Runting retired from practice about four years ago. He had the honor of holding the Royal Warrant of Appointment as chiropodist to her late majesty, Queen Mary. He was a charter member and the first president of the Incorporated Society of Chiropodists. Along with the late Mr. H. A. O. Scherf, he was joint editor of *The Chiropodist* when it first appeared in January 1914. Mr. Runting was one of the founders and a member of the faculty of the London Foot Hospital. He contributed many scientific articles to chiropody publications and was the author of *Practical Chiropody, Chiropody Jottings* and *Battalion Chiropody*.

Practical Chiropody appeared in its eighth edition in 1952, a record achieved by no other chiropody book. Mr. Runting was elected to honorary membership in the National Association of Chiropodists in 1935.

The profession in America takes this opportunity of extending sincere sympathy to both the Runting family and our British colleagues on the passing of one of chiropody's great leaders. Mr. Runting's many contributions have favorably influenced the entire profession.

Dr. Leon A. Wetzel
Mt. Carmel, Pa.

Dr. Wetzel passed away on February 2, 1954. He was a member

of Pi Epsilon Delta Fraternity, Mt. Carmel Lodge No. 278, A. F. & A. M., and was active in many civic organizations in his home town. He is survived by his wife, Mrs. Betty Wetzel, and his two sons.

Dr. A. W. Hirschfield
Pittsburgh, Pa.

Dr. Hirschfield, age 45, who practiced in Pittsburgh for more than 20 years, recently passed away. He graduated from the Ohio College of Chiropody and is survived by his wife and two daughters.

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D. Guthrie, Proceedings of the Royal Society of Medicine 45:92, 1952

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Cincinnati, Ohio, May 14-16, 1954
Netherland-Plaza Hotel

REGION ELEVEN
Hot Springs, Ark., June 17-19, 1954
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Announcement Concerning Listing in 1954 N.A.C. Membership Directory

All members are hereby notified that dues for the year 1953-54 must be paid in order to assure listing in the N.A.C. Membership Directory now in preparation.

In the event that your name or address contains an error on the mailing stencil (see envelope in which N.A.C. Journal is delivered), be sure to notify us immediately, in order that correction can be made in the directory.

Men will be listed with initials only. Given names will be used in listing women. Only one address for each member can be published.

Dr. William J. Stickel
Executive Secretary

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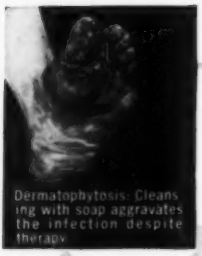

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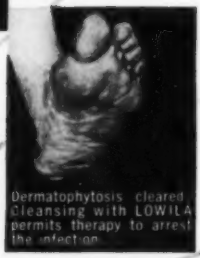

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*Lewis, G. M. and Torre, D. P.: "Fungus Diseases," Current Therapy, W. B. Saunders Co., Philadelphia, 1953, p. 551.

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